

## HBR Classic

Pricing policies  
for  
new products

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HBR first published this article in November 1950 as a practical guide to the problems involved in pricing new products. Particularly in the early stages of competition, it is necessary to estimate demand, anticipate the effect of various possible combinations of prices, and choose the most suitable promotion policy. Then as the product's market status matures, policy revisions become necessary. Joel Dean outlines the possible price strategies for each stage of a product's market evolution and the various grounds for making a choice. To update his original statement, Mr. Dean has written a retrospective comment, which appears at the end of this article. He amplifies his earlier article with insights from intervening years and in light of such developments as inflation.

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*Photograph of 1950 product is courtesy of the Bettmann Archive.*

How to price a new product is a top management puzzle that is too often solved by cost-theology and hunch. This article suggests a pricing policy geared to the dynamic nature of a new product's competitive status. Today's high rate of innovation makes the economic evolution of a new product a strategic guide to practical pricing.

New products have a protected distinctiveness which is doomed to progressive degeneration from competitive inroads. The invention of a new marketable specialty is usually followed by a period of patent protection when markets are still hesitant and unexplored and when product design is fluid.

Then comes a period of rapid expansion of sales as market acceptance is gained.

Next the product becomes a target for competitive encroachment. New competitors enter the field, and innovations narrow the gap of distinctiveness between the product and its substitutes. The seller's zone of pricing discretion narrows as his distinctive "specialty" fades into a pedestrian "commodity" which is so little differentiated from other products that the seller has limited independence in pricing, even if rivals are few.

Throughout the cycle, continual changes occur in promotional and price elasticity and in costs of production and distribution. These changes call for adjustments in price policy.

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Appropriate pricing over the cycle depends on the development of three different aspects of maturity, which usually move in almost parallel time paths:

1

Technical maturity, indicated by declining rate of product development, increasing standardization among brands, and increasing stability of manufacturing processes and knowledge about them.

2

Market maturity, indicated by consumer acceptance of the basic service idea, by widespread belief that the products of most manufacturers will perform satisfactorily, and by enough familiarity and sophistication to permit consumers to compare brands competently.

3

Competitive maturity, indicated by increasing stability of market shares and price structures.

Of course, interaction among these components tends to make them move together. That is, intrusion by new competitors helps to develop the market, but entrance is most tempting when the new product appears to be establishing market acceptance.

The rate at which the cycle of degeneration progresses varies widely among products. What are the factors that set its pace? An overriding determinant is technical—the extent to which the economic environment must be reorganized to use the innovation effectively. The scale of plant investment and technical research called forth by the telephone, electric power, the automobile, or air transport makes for a long gestation period, as compared with even such major innovations as cellophane or frozen foods.

Development comes fastest when the new gadget fills a new vacuum made to order for it. Electric stoves, as one example, have risen to 50% market saturation in the fast-growing Pacific Northwest, where electric power has become the lowest cost energy.

Products still in early developmental stages also provide rich opportunities for product differentiation, which with heavy research costs holds off competitive degeneration.

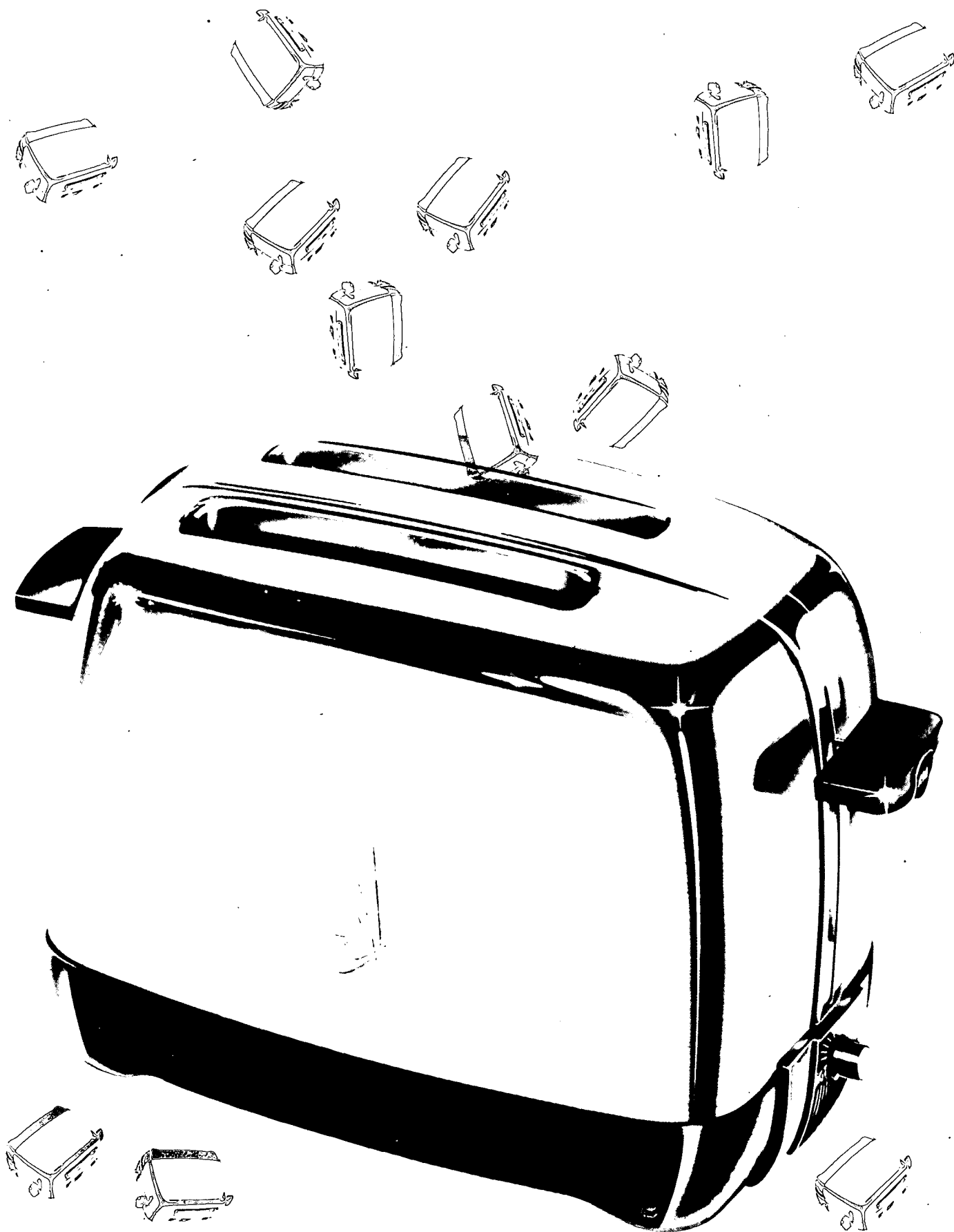
But aside from technical factors, the rate of degeneration is controlled by economic forces that can be subsumed under rate of market acceptance and ease of competitive entry.

By *market acceptance* is meant the extent to which buyers consider the product a serious alternative to other ways of performing the same service. Market acceptance is a frictional factor. The effect of cultural lags may endure for some time after quality and costs make products technically useful. The slow catch-on of the "electric pig" (garbage-disposal unit) is an example.

On the other hand, the attitude of acceptance may exist long before any workable model can be developed; then the final appearance of the product will produce an explosive growth curve in sales. The antihistamine cold tablet, a spectacular example, reflects the national faith in chemistry's ability to vanquish the common cold. And, of course, low unit price may speed market acceptance of an innovation; ball-point pens and all-steel houses started at about the same time, but look at the difference in their sales curves.

*Ease of competitive entry* is a major determinant of the speed of degeneration of a specialty. An illustration is found in the washing machine business before the war, where with little basic patent protection the Maytag position was quickly eroded by small manufacturers who performed essentially an assembly operation. The ball-point pen cascaded from a \$12 novelty to a 49-cent "price football," partly because entry barriers of patents and techniques were ineffective. Frozen orange juice, which started as a protected specialty of Minute Maid, is speeding through its competitive cycle, with competing brands now crowding into the market.

At the outset the innovator can control the rate of competitive deterioration to an important degree by nonprice as well as by price strategies. Through successful research in product improvement he can protect his specialty position both by extending the life of his basic patent and by keeping ahead of competitors in product development. The record of the International Business Machines punch-card equipment illustrates this potentiality. Ease of entry is also affected by a policy of stay-out pricing (so low as to make the prospects look uninviting), which under some circumstances may slow down the process of competitive encroachment.



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## Steps in pioneer pricing

Pricing problems start when a company finds a product that is a radical departure from existing ways of performing a service and that is temporarily protected from competition by patents, secrets of production, control at the point of a scarce resource, or by other barriers. The seller here has a wide range of pricing discretion resulting from extreme product differentiation.

A good example of pricing latitude conferred by protected superiority of product is provided by the McGraw Electric Company's "Toastermaster," which, both initially and over a period of years, was able to command a very substantial price premium over competitive toasters. Apparently this advantage resulted from (a) a good product that was distinctive and superior and (b) substantial and skillful sales promotion.

Similarly, Sunbeam priced its electric iron \$2 above comparable models of major firms with considerable success. And Sunbeam courageously priced its new metal coffeemaker at \$32, much above competitive makes of glass coffeemakers, but it was highly successful.

To get a picture of how a manufacturer should go about setting his price in the pioneer stage, let me describe the main steps of the process (of course the classification is arbitrary and the steps are inter-related): (a) estimate of demand, (b) decision on market targets, (c) design of promotional strategy, and (d) choice of distribution channels.

### Estimate of demand

The problem at the pioneer stage differs from that in a relatively stable monopoly because the product is beyond the experience of buyers and because the perishability of its distinctiveness must be reckoned with. How can demand for new products be explored? How can we find out how much people will pay for a product that has never before been seen or used? There are several levels of refinement to this analysis.

The initial problem of estimating demand for a new product can be broken into a series of subproblems: (a) whether the product will go at all (assuming

price is in a competitive range), (b) what range of price will make the product economically attractive to buyers, (c) what sales volumes can be expected at various points in this price range, and (d) what reaction will price produce in manufacturers and sellers of displaced substitutes.

The first step is an exploration of the *preferences and educability of consumers*, always, of course, in the light of the technical feasibility of the new product. How many potential buyers are there? Is the product a practical device for meeting their needs? How can it be improved to meet their needs better? What proportion of the potential buyers would prefer, or could be induced to prefer, this product to already existing products (prices being equal)?

Sometimes it is feasible to start with the assumption that all vulnerable substitutes will be fully displaced. For example, to get some idea of the maximum limits of demand for a new type of reflecting-sign material, a company started with estimates of the aggregate number and area of auto license plates, highway markers, railroad operational signs, and name signs for streets and homes. Next, the proportion of each category needing night-light reflection was guessed. For example, it was assumed that only rural and suburban homes could benefit by this kind of name sign, and the estimate of need in this category was made accordingly.

It is not uncommon and possibly not unrealistic for a manufacturer to make the blithe assumption at this stage that the product price will be "within a competitive range" without having much idea of what that range is. For example, in developing a new type of camera equipment, one of the electrical companies judged its acceptability to professional photographers by technical performance without making any inquiry into its economic value. When the equipment was later placed in an economic setting, the indications were that sales would be negligible.

The second step is marking out this *competitive range of price*. Vicarious pricing experience can be secured by interviewing selected distributors who have enough comparative knowledge of customers' alternatives and preferences to judge what price range would make the new product "a good value." Direct discussions with representative experienced industrial users have produced reliable estimates of the "practical" range of prices. Manufacturers of electrical equipment often explore the economic as well as the technical feasibility of a new product by sending engineers with blueprints and models to see

customers, such as technical and operating executives.

In guessing the price range of a radically new consumers' product of small unit value, the concept of barter equivalent can be a useful research guide.

For example, a manufacturer of paper specialties tested a dramatic new product in the following fashion: A wide variety of consumer products totally unlike the new product were purchased and spread out on a big table. Consumers selected the products they would swap for the new product. By finding out whether the product would trade even for a dish pan, a towel, or a hairpin, the executives got a rough idea of what range of prices might strike the typical consumer as reasonable in the light of the values she could get for her money in totally different kinds of expenditures.

But asking prospective consumers how much they think they would be willing to pay for a new product, even by such indirect or disguised methods, may often fail to give a reliable indication of the demand schedule. Most times people just do not know what they would pay. It depends partly on their income and on future alternatives. Early in the postwar period a manufacturer of television sets tried this method and got highly erratic and obviously unreliable results because the distortion of war shortages kept prospects from fully visualizing the multiple ways of spending their money.

Another deficiency, which may, however, be less serious than it appears, is that responses are biased by the consumer's confused notion that he is bargaining for a good price. Not until techniques of depth interviewing are more refined than they are now can this crude and direct method of exploring a new product's demand schedule hold much promise of being accurate.

One appliance manufacturer tried out new products on a sample of employees by selling to them at deep discounts, with the stipulation that they could if they wished return the products at the end of the experiment period and get a refund of their low purchase price. Demand for foreign orange juice was tested by placing it in several markets at three different prices, ranging around the price of fresh fruit; the result showed rather low price elasticity.

While inquiries of this sort are often much too short-run to give any real indication of consumer tastes, the relevant point here is that even such rough prob-

ing often yields broad impressions of price elasticity, particularly in relation to product variations such as styling, placing of controls, and use of automatic features. It may show, for example, that \$5 of cost put into streamlining or chromium stripping can add \$50 to the price.

The third step, a more definite inquiry into the *probable sales from several possible prices*, starts with an investigation of the prices of substitutes. Usually the buyer has a choice of existing ways of having the same service performed; an analysis of the costs of these choices serves as a guide in setting the price for a new way.

Comparisons are easy and significant for industrial customers who have a costing system to tell them the exact value, say, of a fork-lift truck in terms of warehouse labor saved. Indeed, chemical companies setting up a research project to displace an existing material often know from the start the top price that can be charged for the new substitute in terms of cost of the present material.

But in most cases the comparison is obfuscated by the presence of quality differences that may be important bases for price premiums. This is most true of household appliances, where the alternative is an unknown amount of labor of a mysterious value. In pricing a cargo parachute the choices are: (a) free fall in a padded box from a plane flown close to the ground, (b) landing the plane, (c) back shipment by land from the next air terminal, or (d) land shipment all the way. These options differ widely in their service value and are not very useful pricing guides.

Thus it is particularly hard to know how much good will be done by making the new product cheaper than the old by various amounts, or how much the market will be restricted by making the new product more expensive. The answers usually come from experiment or research.

The fourth step in estimating demand is to consider the *possibility of retaliation by manufacturers of displaced substitutes* in the form of price cutting. This development may not occur at all if the new product displaces only a small market segment. If old industries do fight it out, however, their incremental costs provide a floor to the resulting price competition and should be brought into price plans.

For example, a manufacturer of black-and-white sensitized paper studied the possibility that lowering his price would displace blueprint paper sub-

stantially. Not only did he investigate the prices of blueprint paper, but he also felt it necessary to estimate the out-of-pocket cost of making blueprint paper because of the probability that manufacturers already in the market would fight back by reducing prices toward the level of their incremental costs.

### Decision on market targets

When the company has developed some idea of the range of demand and the range of prices that are feasible for the new product, it is in a position to make some basic strategic decisions on market targets and promotional plans. To decide on market objectives requires answers to several questions: What ultimate market share is wanted for the new product? How does it fit into the present product line? What about production methods? What are the possible distribution channels?

These are questions of joint costs in production and distribution, of plant expansion outlays, and of potential competition. If entry is easy, the company may not be eager to disrupt its present production and selling operations to capture and hold a large slice of the new market. But if the prospective profits shape up to a substantial new income source, it will be worthwhile to make the capital expenditures on plant needed to reap the full harvest.

A basic factor in answering all these questions is the expected behavior of production and distribution costs. The relevant data here are all the production outlays that will be made after the decision day—the capital expenditures as well as the variable costs. A go-ahead decision will hardly be made without some assurance that these costs can be recovered before the product becomes a football in the market. Many different projections of costs will be made, depending on the alternative scales of output, rate of market expansion, threats of potential competition, and measures to meet that competition that are under consideration. But these factors and the decision that is made on promotional strategy are interdependent. The fact is that this is a circular problem that in theory can only be solved by simultaneous equations.

Fortunately, it is possible to make some approximations that can break the circle: scale economies become significantly different only with broad changes in the size of plant and the type of production methods. This narrows the range of cost projections to workable proportions. The effects of using different

distribution channels can be guessed fairly well without meshing the choices in with all the production and selling possibilities. The most vulnerable point of the circle is probably the decision on promotional strategy. The choices here are broad and produce a variety of results. The next step in the pricing process is therefore a plan for promotion.

### Design of promotional strategy

Initial promotion outlays are an investment in the product that cannot be recovered until some kind of market has been established. The innovator shoulders the burden of creating a market—educating consumers to the existence and uses of the product. Later imitators will never have to do this job; so, if the innovator does not want to be simply a benefactor to his future competitors, he must make pricing plans to recover his initial outlays before his pricing discretion evaporates.

His basic strategic problem is to find the right mixture of price and promotion to maximize his long-run profits. He can choose a relatively high price in pioneering stages, together with extravagant advertising and dealer discounts, and plan to get his promotion costs back early; or he can use low prices and lean margins from the very outset in order to discourage potential competition when the barriers of patents, distribution channels, or production techniques become inadequate. This question is discussed further shortly.

### Choice of distribution channels

Estimation of the costs of moving the new product through the channels of distribution to the final consumer must enter into the pricing procedure since these costs govern the factory price that will result in a specified consumer price and since it is the consumer price that matters for volume. Distributive margins are partly pure promotional costs and partly physical distribution costs. Margins must at least cover the distributors' costs of warehousing, handling, and order taking. These costs are similar to factory production costs in being related to physical capacity and its utilization, i.e., fluctuations in production or sales volume.

Hence these set a floor to trade-channel discounts. But distributors usually also contribute promotional effort—in point-of-sale pushing, local advertising, and display—when it is made worth their while.

These pure promotional costs are more optional. Unlike physical handling costs they have no necessary functional relation to sales volume. An added layer of margin in trade discounts to produce this localized sales effort (with retail price fixed) is an optional way for the manufacturer to spend his prospecting money in putting over a new product.

In establishing promotional costs, the manufacturer must decide on the extent to which the selling effort will be delegated to members of the distribution chain. Indeed, some distribution channels, such as house-to-house selling and retail store selling supplemented by home demonstrators, represent a substantial delegation of the manufacturer's promotional job, and these usually involve much higher distribution-channel costs than do conventional methods.

Rich distributor margins are an appropriate use of promotion funds only when the producer thinks a high price plus promotion is a better expansion policy in the specialty than low price by itself. Thus there is an intimate interaction between the pricing of a new product and the costs and the problems of floating it down the distribution channels to the final consumer.

## Policies for pioneer pricing

The strategic decision in pricing a new product is the choice between (a) a policy of high initial prices that skim the cream of demand and (b) a policy of low prices from the outset serving as an active agent for market penetration. Although the actual range of choice is much wider than this, a sharp dichotomy clarifies the issues for consideration.

### Skimming price

For products that represent a drastic departure from accepted ways of performing a service, a policy of relatively high prices coupled with heavy promotional expenditures in the early stages of market development (and lower prices at later stages) has proved successful for many products. There are several reasons for the success of this policy:

1

Demand is likely to be more inelastic with respect to price in the early stages than it is when the product is full grown. This is particularly true for consumers' goods. A novel product, such as the electric blanket or the electric pig, is not yet accepted as a part of the expenditure pattern. Consumers are still ignorant about its value compared with the value of conventional alternatives. Moreover, at least in the early stages, the product has so few close rivals that cross-elasticity of demand is low.

Promotional elasticity is, on the other hand, quite high, particularly for products with high unit prices such as television sets. Since it is difficult for the customer to value the service of the product in a way to price it intelligently, he is by default principally interested in how well it will work.

2

Launching a new product with a high price is an efficient device for breaking the market up into segments that differ in price elasticity of demand. The initial high price serves to skim the cream of the market that is relatively insensitive to price. Subsequent price reductions tap successively more elastic sectors of the market. This pricing strategy is exemplified by the systematic succession of editions of a book, sometimes starting with a \$50 limited personal edition and ending up with a 25-cent pocket book.

3

This policy is safer, or at least appears so. Facing an unknown elasticity of demand, a high initial price serves as a "refusal" price during the stage of exploration. How much costs can be reduced as the market expands and as the design of the product is improved by increasing production efficiency with new techniques is difficult to predict. One of the electrical companies recently introduced a new lamp bulb at a comparatively high initial price, but they made the announcement that the price would be reduced as the company found ways of cutting its costs.

4

Many companies are not in a position to finance the product flotation out of distant future revenues. High cash outlays in the early stages result from heavy costs of production and distributor organizing, in addition to the promotional investment in the pioneer product. High prices are a reasonable financing technique for shouldering these burdens in the light of the many uncertainties about the future.

## Penetration price

The alternative policy is to use low prices as the principal instrument for penetrating mass markets early. This policy is the reverse of the skimming policy in which the price is lowered only as short-run competition forces it.

The passive skimming policy has the virtue of safeguarding some profits at every stage of market penetration. But it prevents quick sales to the many buyers who are at the lower end of the income scale or the lower end of the preference scale and who therefore are unwilling to pay any substantial premium for product or reputation superiority. The active approach in probing possibilities for market expansion by early penetration pricing requires research, forecasting, and courage.

A decision to price for market expansion can be reached at various stages in a product's life cycle: before birth, at birth, in childhood, in adulthood, or in senescence. The chances for large-volume sales should at least be explored in the early stages of product development research, even before the pilot stage, perhaps with a more definitive exploration when the product goes into production and the price and distribution plans are decided upon. And the question of pricing to expand the market, if not answered earlier, will probably arise once more after the product has established an elite market.

Quite a few products have been rescued from premature senescence by pricing them low enough to tap new markets. The reissues of important books in the 25-cent pocket book category illustrate this point particularly well. These have produced not only commercial but intellectual renaissance as well to many authors. The patterns of sales growth of a product that had reached stability in a high-price market have undergone sharp changes when it was suddenly priced low enough to tap new markets.

A contrasting illustration of passive policy is the recent pricing experience of the airlines. Although safety considerations and differences in equipment and service cloud the picture, it is pretty clear that the bargain-rate coach fares of scheduled airlines were adopted in reaction to the cut rates of non-scheduled airlines. This competitive response has apparently established a new pattern of traffic growth for the scheduled airlines.

An example of penetration pricing at the initial stage of the product's market life, again from the book

field, is Simon & Schuster's recently adopted policy of bringing out new titles in a \$1, paper-bound edition simultaneously with the conventional higher priced, cloth-bound edition.

What conditions warrant aggressive pricing for market penetration? This question cannot be answered categorically, but it may be helpful to generalize that the following conditions indicate the desirability of an early low-price policy.

□

A high price-elasticity of demand in the short run, i.e., a high degree of responsiveness of sales to reductions in price.

□

Substantial savings in production costs as the result of greater volume—not a necessary condition, however, since if elasticity of demand is high enough, pricing for market expansion may be profitable without realizing production economies.

□

Product characteristics such that it will not seem bizarre when it is first fitted into the consumers' expenditure pattern.

□

A strong threat of potential competition.

This threat of potential competition is a highly persuasive reason for penetration pricing. One of the major objectives of most low-pricing policies in the pioneering stages of market development is to raise entry barriers to prospective competitors. This is appropriate when entrants must make large-scale investments to reach minimum costs and they cannot slip into an established market by selling at substantial discounts.

In many industries, however, the important potential competitor is a large, multiple-product firm operating as well in other fields than that represented by the product in question. For a firm, the most important consideration for entry is not existing margins but the prospect of large and growing volume of sales. Present margins over costs are not the dominant consideration because such firms are normally confident that they can get their costs down as low as competitors' costs if the volume of production is large.

Therefore, when total industry sales are not expected to amount to much, a high-margin policy can be followed because entry is improbable in view of the expectation of low volume and because it does



not matter too much to potential competitors if the new product is introduced.

The fact remains that for products whose market potential appears big, a policy of stayout pricing from the outset makes much more sense. When a leading soap manufacturer developed an additive that whitened clothes and enhanced the brilliance of colors, the company chose to take its gains in a larger share of the market rather than in a temporary price premium. Such a decision was sound, since the company's competitors could be expected to match or better the product improvement fairly promptly. Under these circumstances, the price premium would have been short-lived, whereas the gains in market share were more likely to be retained.

Of course, any decision to start out with lower prices must take into account the fact that if the new product calls for capital recovery over a long period, the risk may be great that later entrants will be able to exploit new production techniques which can undercut the pioneer's original cost structure. In such cases, the low-price pattern should be adopted with a view to long-run rather than to short-run profits, with recognition that it usually takes time to attain the volume potentialities of the market.

It is sound to calculate profits in dollar terms rather than in percentage margins and to think in terms of percentage return on the investment required to produce and sell the expanded volume rather than in terms of percentage markup. Profit calculation should also recognize the contributions that market-development pricing can make to the sale of other products and to the long-run future of the company. Often a decision to use development pricing will turn on these considerations of long-term impacts upon the firm's total operation strategy rather than on the profits directly attributable to the individual product.

An example of market-expansion pricing is found in the experience of a producer of asbestos shingles, which have a limited sale in the high-price house market. The company wanted to broaden the market in order to compete effectively with other roofing products for the inexpensive home. It tried to find the price of asphalt shingles that would make the annual cost per unit of roof over a period of years as low as the cheaper roofing that currently commanded the mass market. Indications were that the price would have to be at least this low before volume sales would come.

Next, the company explored the relationship between production costs and volume, far beyond the range of its own volume experience. Variable costs and overhead costs were estimated separately, and the possibilities of a different organization of production were explored. Calculating in terms of anticipated dollars of profit rather than in terms of percentage margin, the company reduced the price of asbestos shingles and brought the annual cost down close to the cost of the cheapest asphalt roof. This reduction produced a greatly expanded volume and secured a substantial share of the mass market.

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## Pricing in maturity

To determine what pricing policies are appropriate for later stages in the cycle of market and competitive maturity, the manufacturer must be able to tell when a product is approaching maturity. Some of the symptoms of degeneration of competitive status toward the commodity level are:

*Weakening in brand preference*—this may be evidenced by a higher cross-elasticity of demand among leading products, the leading brand not being able to continue demanding as much price premium as initially without losing position.

*Narrowing physical variation among products as the best designs are developed and standardized*—this has been dramatically demonstrated in automobiles and is still in process in television receivers.

*The entry in force of private-label competitors*—this is exemplified by the mail-order houses' sale of own-label refrigerators and paint sprayers.

*Market saturation*—the ratio of replacement sales to new equipment sales serves as an indicator of the competitive degeneration of durable goods, but in general it must be kept in mind that both market size and degree of saturation are hard to define (e.g., saturation of the radio market, which was initially thought to be one radio per home and later had to be expanded to one radio per room).

*The stabilization of production methods*—a dramatic innovation that slashes costs (e.g., prefabricated houses) may disrupt what appears to be a well-stabilized oligopoly market.

The first step for the manufacturer whose specialty is about to slip into the commodity category is to reduce real prices promptly as soon as symptoms of deterioration appear. This step is essential if he is to forestall the entry of private-label competitors. Examples of failure to make such a reduction are abundant.

By and large, private-label competition has speeded up the inevitable evolution of high specialties into commodities and has tended to force margins down by making price reductions more open and more universal than they would otherwise be. From one standpoint, the rapid growth of the private-label share in the market is a symptom of unwise pricing on the part of the national-brand sector of the industry.

This does not mean that the manufacturer should declare open price war in the industry. When he moves into mature competitive stages, he enters oligopoly relationships where price slashing is peculiarly dangerous and unpopular. But, with active competition in prices precluded, competitive efforts may move in other directions, particularly toward product improvement and market segmentation.

Product improvement at this stage, where most of the important developments have been put into all brands, practically amounts to market segmentation. For it means adding refinements and quality extras that put the brand in the elite category, with an appeal only to the top-income brackets. This is a common tactic in food marketing, and in the tire industry it was the response of the General Tire Company to the competitive conditions of the 1930s.

As the product matures and as its distinctiveness narrows, a choice must sometimes be made by the company concerning the rung of the competitive price ladder it should occupy—roughly, the choice between a low and a not-so-low relative price.

A price at the low end of the array of the industry's real prices is usually associated with a product mixture showing a lean element of services and reputation (the product being physically similar to competitive brands, however) and a company having a lower gross margin than the other industry members (although not necessarily a lower net margin). The choice of such a low-price policy may be dictated by technical or market inferiorities of the product, or it may be adopted because the company has faith in the long-run price elasticity of demand and the ability of low prices to penetrate an important seg-

ment of the market not tapped by higher prices. The classic example is Henry Ford's pricing decision in the 1920s.

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## In summary

In pricing products of perishable distinctiveness, a company must study the cycle of competitive degeneration in order to determine its major causes, its probable speed, and the chances of slowing it down. Pricing in the pioneering stage of the cycle involves difficult problems of projecting potential demand and of guessing the relation of price to sales.

The first step in this process is to explore consumer preferences and to establish the feasibility of the product, in order to get a rough idea of whether demand will warrant further exploration. The second step is to mark out a range of prices that will make the product economically attractive to buyers. The third step is to estimate the probable sales that will result from alternative prices.

If these initial explorations are encouraging, the next move is to make decisions on promotional strategy and distribution channels. The policy of relatively high prices in the pioneering stage has much to commend it, particularly when sales seem to be comparatively unresponsive to price but quite responsive to educational promotion.

On the other hand, the policy of relatively low prices in the pioneering stage, in anticipation of the cost savings resulting from an expanding market, has been strikingly successful under the right conditions. Low prices look to long-run rather than short-run profits and discourage potential competitors.

Pricing in the mature stages of a product's life cycle requires a technique for recognizing when a product is approaching maturity. Pricing problems in this stage border closely on those of oligopoly.

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## Retrospective commentary

Twenty-five years have brought important changes and have taught us much, but the basics of pricing pioneer products are the same, only clearer. New product pricing, if the product is truly novel, is in essence monopoly pricing—modified only because the monopoly power of the new product is (a) restricted because buyers have alternatives, (b) ephemeral because it is subject to inevitable erosion as competitors equal or better it, and (c) controllable because actions of the seller can affect the amount and the durability of the new product's market power.

In pricing, the buyers' viewpoint should be controlling. For example, buyer's-rate-of-return pricing of new capital equipment looks at your price through the eyes of the customer. It recognizes that the upper limit is the price that will produce the minimum acceptable rate of return on the investment of a sufficiently large number of prospects. This return has a broad range for two reasons. First, the added profits obtainable from the use of your equipment will differ among customers and among applications for the same customer. Second, prospective customers also differ in the minimum rate of return that will induce them to invest in your product.

This capital-budgeting approach opens a new kind of demand analysis, which involves inquiry into: (a) the costs of buyers from displaceable alternative ways of doing the job, (b) the cost-saving and profit-producing capability of your equipment, and (c) the capital management policies of your customers, particularly their cost of capital and cut-off criteria.

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### Role of cost

Cost should play a role in new product pricing quite different from that in traditional cost-plus pricing. To use cost wisely requires answers to some questions of theory: Whose cost? Which cost? What role?

As to whose cost, three persons are important: prospective buyers, existent and potential competitors,

and the producer of the new product. For each of the three, cost should play a different role and the concept of cost should differ accordingly.

The role of prospective buyers' costs is to forecast their response to alternative prices by determining what your product will do to the costs of your buyers. Rate-of-return pricing of capital goods illustrates this buyer's-cost approach, which is applicable in principle to all new products.

Cost is usually the crucial estimate in appraising competitors' capabilities. Two kinds of competitor costs need to be forecasted. The first is for products already in the marketplace. One purpose is to predict staying power; for this the cost concept is competitors' long-run incremental cost. Another purpose may be to guess the floor of retaliation pricing; for this we need competitors' short-run incremental cost.

The second kind is the cost of a competitive product that is unborn, but that could eventually displace yours. Time-spotted prediction of the performance characteristics, the costs, and the probable prices of future new products is both essential and possible. Such a prediction is essential because it determines the economic life expectancy of your product and the shape of its competitiveness cycle.

It is possible, first, because the pace of technical advance in product design is persistent and can usually be determined by statistical study of past progress. It is possible, second, because the rate at which competitors' cost will slide down the cost compression curve that results from cost-saving investments in manufacturing equipment, methods, and worker learning is usually a logarithmic function of cumulative output. Thus this rate can be ascertained and projected.

The producer's cost should play several different roles in pricing a new product, depending on the decision involved. The first decision concerns capital control. A new product must be priced before any significant investment is made in research and must be periodically repriced when more money is invested as its development progresses toward market. The concept of cost that is relevant for this decision

is the predicted full cost, which should include imputed cost of capital on intangible investment over the whole life cycle of the new product. Its profitability and investment return are meaningless for any shorter period.

A second decision is "birth control." The commercialization decision calls for a similar concept of cost and discounted cash-flow investment analysis, but one that is confined to incremental investment beyond product birth.

Another role of cost is to establish a price floor that is also the threshold for selecting from candidate prices those that will maximize return on a new product investment at different stages of its life. The relevant concept here is future short-run incremental cost.

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## Segmentation pricing

Particularly for new products, an important tactic is differential pricing for separated market segments. To enhance profits, we split the market into sectors that differ in price sensitivity, charging higher prices to those who are impervious and lower prices to the more sensitive souls.

One requisite is the ability to identify and seal off groups of prospects who differ in sensitivity of sales to price and/or differ in the effectiveness of competition (cross-elasticity of demand). Another is that leakage from the low price segment must be small and costs of segregation low enough to make it worthwhile.

One device is time segmentation: a skimming price strategy at the outset followed by penetration pricing as the product matures. Another device is price-shaped modification of a basic product to enhance traits for which one group of customers will pay dearly (e.g., reliability for the military).

A similar device is product-configuration differentials (notably extras: the roof of the Stanley Steamer was an extra when it was a new product). Another is afterlife pricing (e.g., repair parts, expendable components, and auxiliary services). Also, trade channel discounts commonly achieve profitable price discrimination (e.g., original equipment discounts).

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## Cost compression curve

Cost forecasting for pricing new products should be based on the cost compression curve, which relates real manufacturing cost per unit of value added to the cumulative quantity produced. This cost function (sometimes labeled "learning curve" or "experience curve") is mainly the consequence of cost cutting investments (largely intangible) to discover and achieve internal substitutions, automation, worker learning, scale economies, and technological advances. Usually these move together as a logarithmic function of accumulated output.

Cost compression curve pricing of technically advanced products (for example, a microprocessor) epitomizes penetration pricing. It condenses the time span of the process of cutting prices *ahead* of forecasted cost savings in order to beat competitors to the bigger market and the resulting manufacturing economies that are opened up because of creative pricing.

This cost compression curve pricing strategy, which took two decades for the Model T's life span, is condensed into a few months for the integrated circuit. But though the speed and the sources of saving are different, the principle is the same: a steep cost compression curve suggests penetration pricing of a new product. Such pricing is most attractive when the product superiority over rivals is small and ephemeral and when entry and expansion by competitors is easy and probable.

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## Impacts of inflation

Continuous high-speed inflation has important impacts on new product pricing. It changes the goal. It renders obsolete accounted earnings per share as the corporation's overriding goal—replacing it with maximization of the present worth (discounted at the corporation's cost of capital) of the future stream of real purchasing power dividends (including a terminal dividend or capital gain). Real earnings in terms of cash-flow buying power alone determine the power to pay real dividends.

Inflation raises the buyers' bench-mark costs of the new products' competitive alternatives. Thus it lifts the buyer benefits obtainable from the new products' protected distinctiveness (for example, it saves more wage dollars).

It raises the seller's required return on the investment to create and to launch the new product. Why? Because his cost of equity capital and of debt capital will be made higher to compensate for anticipated inflation. For the same reason, inflation raises the customer's cutoff point of minimum acceptable return. It also intensifies the rivalry for scarce investment dollars among the seller's new product candidates. Hence it probably tends to increase stillbirths, but may lower subsequent infant mortality. For these reasons, perennial inflation will make an economic attack on the problem of pricing new products even more compelling.

Pricing of new products remains an art. But the experienced judgment required to price and reprice the product over its life cycle to fit its changing competitive environment may be improved by considering seven pricing precepts suggested by this analysis.

1

Pricing a new product is an occasion for rethinking the overriding corporate goal. This goal should be to maximize the present worth, discounted at the corporation's cost of capital, of the future stream of real (purchasing-power) dividends, including a terminal dividend or capital gain. The Wall Street traditional objective—maximizing the size or the growth of book earnings per share—is an inferior master goal that is made obsolete by inflation.

2

The unit for making decisions and for measuring return on investment is the entire economic life of the new product. Reported *annual* profits on a new product have little economic significance. The pricing implications of the new product's changing competitive status as it passes through its life cycle from birth to obsolescence are intricate but compelling.

3

Pricing of a new product should begin long before its birth, and repricing should continue over its life cycle. Prospective prices coupled with forecasted costs should control the decision to invest in its development, the determination to launch it commercially, and the decision to kill it.

4

Your new product should be viewed through the eyes of the buyer. Rate of return on customers' in-

vestment should be the main consideration in pricing a pioneering capital good: the buyers' savings (and added earnings), expressed as return on his investment in your new product, are the key to both estimating price sensitivity of demand and pricing profitably.

5

Costs can supply useful guidance in new product pricing, but not by the conventional wisdom of cost-plus pricing. Costs of three persons are pertinent: the buyer, your rival, and the producer himself. The role of cost differs among the three, as does the concept of cost that is pertinent to that role: different costs for different decisions.

6

A strategy of price skimming can be distinguished from a strategy of penetration pricing. Skimming is appropriate at the outset for some pioneering products, particularly when followed by penetration pricing (for example, the price cascade of a new book). In contrast, a policy of penetration pricing from the outset, in anticipation of the cost compression curve for manufacturing costs, is usually best when this curve falls steeply and projectably, and is buttressed by economies of scale and of advancing technology, and when demand is price sensitive and invasion is threatened.

7

Penetration and skimming pricing can be used at the same time in different sectors of the market. Creating opportunities to split the market into segments that differ in price sensitivity and in competitiveness, so as to simultaneously charge higher prices in insensitive segments and price low to elastic sectors, can produce extra profits and faster cost-compression for a new product. Devices are legion.

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